Solomon Modeling TAC Meeting

March 10, 2008

Attendees: USBR- Jack Wergin, Mark Phillips; KWO-Susan Stover, Diane Coe; DWR- Mark Billinger, Scott Voss, Tina Alder, Andrew Lyon, Darci Paull; SSPA- Steve Larson, Alex Spiliotopoulos, Marinko Karanovic

SSPA started the meeting by informing the TAC that both the North Fork and South Fork Solomon River Models were in the final stages of calibration. There were a few issues that were resolved since the last meeting, such as changing the extinction depth of water to 20 feet to help resolve the issues with evapotranspiration. The models were then looked at independently.

North Fork

Steve went through a series of slides reviewing the progress that had been made on the North Fork model. The model is showing a strong ability to replicate baseflows compared to George Austin's work on baseflows in the Solomon. The model is doing a good job at matching the monthly change in amplitude of the baseflow. The better estimates of evapotranspiration and an increase in the streambed conductance have helped to match these monthly baseflow amplitude problems.

Steve then went through a series of hydrographs that show individual well data vs. what the model is predicting over time. These hydrographs show that the North Fork model is well calibrated to water levels and stream flows.

The water budget from the model was also discussed, with some of the larger components in the range of: Recharge = ~ 27,000 ac-ft/yr, ET = ~ 11,500 ac-ft/yr, and drains from the RRCA Model contributing to North Fork Model = ~ 4,000 ac-ft/yr.

South Fork

During this meeting SSPA spent time specifically describing the South Fork model. The model is predicting annual stream flow well when compared to George Austin's baseflow calculations. The model is also doing a nice job matching the amplitudes of the difference in monthly flows.

As in the North Fork model, the evapotranspiration function was changed to have an extinction depth of 20 feet, and the stream conductance was increased. Again, this helped to improve the ET function and more closely match the estimates provided by Mark Billinger.

Time was spent on looking at the residuals (computed vs. modeled) in the individual wells in the South Fork model. The residual cumulative frequency has a good distribution and the average residuals over time are not showing a significant trend. The Residuals vs. Elevation were compared, with no trend being observed.

Next, the water budget for the South Fork Model was discussed. One of the slides illustrated the fact that the flows in the south fork have less of a baseflow component, therefore the flows show more of a spike with runoff events. This makes the system more difficult for the model to match, but the model is doing a good job of matching the amplitude of the flows. The major components of the water budget were shown, with the amounts in the range of: Recharge = ~ 19,000 ac-ft/yr, Stream outflow = ~ 6,000 ac-ft/yr, and ET = ~ 9,200 ac-ft/yr.

One issue that is still being addressed is that the ET for the South Fork model doesn't have actual acreage given from the Kansas Biological Survey report like the North Fork does. DWR will communicate with SSPA and see if we can get this issue resolved. This issue is not crucial to the model, as the model uses calculations to determine ET, and not just the riparian acreage. However, it is nice to have the acreage, as it gives us an estimation that the model calculations should be relatively close to. It was stressed that this issue isn't a problem, but something we just need to keep in mind.

Drain Flows

The RRCA drains that flow into the North and South Fork Models were addressed now that the reconnaissance data has been collected. The collected data is on the same order of magnitude as the RRCA model predicts. The drains are a small part of the overall water budget, and it was pointed out that the water from the drains that are internal in the Solomon models grids doesn't exit until it reaches the stream or is used as ET. SSPA recommended that nothing be done different with the drains at this time, but that it needed to be noted to remember how to account for the water from the drains when future management scenarios are evaluated.

Finally, the committee was instructed to think about future management scenario runs for the model to perform. DWR will conduct a Solomon Working Group meeting before the next TAC meeting to get some feedback from stakeholders. Once this working group meeting has been scheduled, DWR will inform the TAC so that others may attend. Future management scenarios will be discussed at the next TAC meeting, and we want all of the represented organizations to have input on this topic.

SSPA has provided their slides and hydrographs with well locations from today's meeting and can be downloaded from their ftp site in the Solomon folder: ftp://ftp.sspa.com/kansas

Action Items:
1. DWR will communicate with SSPA to try and resolve the issue of the lack of actual phreatophyte acreage for the South Fork Model.

2. DWR will schedule a Solomon Working Group meeting to be held before the next TAC meeting, and inform the TAC of the date and time.

The next TAC meeting time was not set, so please be on the lookout for communications from DWR as to the date and time of the next TAC meeting, as well as the Solomon Working Group meeting.